

# CLAIMS

1. A method for electronically processing weather data to predict and display when precipitation will start and stop at a location within a geographic area comprising:

a. creating and storing a master steering component grid defining point locations across said geographic area with each point location being assigned a precipitation steering component, said precipitation steering component being based upon either storm motion data or wind speed and direction data at various levels of the atmosphere or both storm motion data and wind speed and direction data at various levels of the atmosphere;

b. creating and storing a master precipitation grid based upon data received from a weather radar network, such data being processed to remove false echoes and ground clutter from data received from individual radar sites and other data, said master precipitation grid indicating the location and type of precipitation;

c. identifying and storing the latitude and longitude information for a particular location within a geographic area;

d. using the master steering component grid to create and store a weather corridor for the particular location, said weather corridor extending from the particular location in the opposite direction of the steering component for the particular location, the length of the corridor being proportional to a value representative of the wind speed portion of the steering component over a specified time period for the particular location, the width of the corridor being defined to

permit detection of precipitation that will impact the particular location and prevent detection of precipitation that will not impact the particular location;

5           e.    using the weather corridor and the master precipitation grid to determine whether precipitation exists within the corridor and, if so, predicting the start and end time of precipitation at the particular location based upon the forecast speed and direction of  
10 movement of precipitation within the corridor; and

          f.    displaying said predicted start and end times on a display.

2.    The method of claim 1 further including the step of indicating on the display the precipitation type.

15       3.    The method of claim 1 wherein said precipitation steering component is also based upon a seasonality factor which takes into account changes that occur throughout the year in the levels of the atmosphere responsible for steering precipitation.

20       4.    The method of claim 1 further including the step of indicating on the display the quantity of precipitation predicted to fall at said location.

25       5.    A method of predicting for each of a plurality of predetermined locations within a geographic area whether precipitation will fall, the time said precipitation will start to fall, and the time said precipitation will stop falling, comprising:

30           a.    storing in a computer-accessible location database (i) the identity of each of a plurality of predetermined locations within a geographic area, and(ii) latitude and longitude information for each of said predetermined locations;

          b.    creating and storing in a computer

accessible steering wind database, data from at least one source related to the speed and direction of wind at various levels in the atmosphere;

5           c.    creating and storing storm motion data in a computer-accessible storm motion database;

          d.    storing in a computer accessible precipitation database, data received from at least one source related to the location and type of precipitation within said geographic area;

10           e.    creating and storing a master steering component grid based upon either data stored in said steering wind database or said storm motion database or in both said steering wind database and said storm motion database, said master steering component grid including  
15           defined points across said geographic area and for each defined point a precipitation steering component, said precipitation steering component based upon storm motion data, the forecast wind speed and direction at various levels of the atmosphere and a selection of at least one  
20           level of the atmosphere responsible for steering precipitation;

          f.    creating and storing a master precipitation grid based upon data in said precipitation database;

25           g.    creating and storing a weather corridor for each of said predetermined locations within the geographic area;

          h.    comparing the weather corridor for each of said predetermined locations with said master  
30           precipitation grid to determine if precipitation is falling within said corridor; and

          i.    if precipitation is falling within said corridor, predicting the start and end times of said

precipitation at the particular location associated with said corridor.

6. A method for electronically processing weather data using a primary computer and a workstation to  
5 predict and display when precipitation will start and stop at a location with a geographic area comprising:

a. collecting steering wind data, storm motion data, numerical model and surface data and base radar data for said geographic area;

10 b. creating (i) a master steering component grid for the geographic area based upon said steering wind data, the master steering component grid defining points across the geographic area and for each such point the calculated speed and direction of the wind  
15 responsible for steering precipitation; and (ii) a master precipitation grid for the geographic area based upon said radar data and said numerical model and surface data, said master precipitation grid identifying the location of areas of precipitation in the geographic area  
20 and the type of precipitation in each area of precipitation;

c. supplying location data comprising the identity of a location within the geographic area and latitude and longitude information for said location;

25 d. using said location data and said master steering component grid to define a weather corridor for the location;

e. using said master precipitation grid to determine whether precipitation exists within said  
30 weather corridor;

f. using said master steering component grid to determine when any precipitation within said corridor will start and stop at the location; and

g. displaying when the precipitation will start and stop at the location.

7. The method of claim 6 wherein steps a and b are performed by the primary computer and steps c-g are performed by the workstation.

8. The method of claim 6 when steps a-f are performed by the primary computer and step g is performed by the workstation.

9. The method of claim 6 wherein the workstation supplies said location data to the first computer and displays when precipitation will start and stop at the location.

10. A method for electronically processing weather information to predict and display when precipitation will start and stop at at least one particular location within a geographic area comprising:

a. identifying and storing the latitude and longitude of at least one particular location within a geographic area;

b. creating and storing a master precipitation grid based upon data received from a radar network;

c. collecting and storing data related to weather conditions that will affect the movement of precipitation in the geographic area covered by the master precipitation grid;

d. creating and storing a projection of the future movement of precipitation based upon said data related to weather conditions that affect the movement of precipitation;

e. determining the times when precipitation will start and stop at said at least one particular location using said stored latitude and longitude for

said location, said master precipitation grid, and said projection of the future movement of precipitation over time, and

f. displaying said times.